

**Government Control and Executive Compensation:  
Evidence from China\***

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# Government Control and Executive Compensation: Evidence from China

## Abstract

Using a sample of state-owned listed companies in China, we examine the relationship between government control and incentive pay schemes. We find that firms under weaker government control have higher levels of pay and greater pay-performance sensitivity. When compared with non-state-owned firms, the levels of pay and pay-performance sensitivity are significantly lower for firms under strong government control but not for firms under weak government control. These results suggest that incentive pay schemes serve as a substitute governance mechanism when government reduces its direct control of the firms. Further, reduced government control affects subsequent firm performance at least partially through the substitute incentive pay schemes. The “high pay, high sensitivity” compensation scheme has the highest, and the “low pay, low sensitivity” scheme has lowest, impact on subsequent firm performance. These results have important policy implications for the design of executive compensation schemes in firms with significant government ownership stake.

*JEL Classification:* G32; G34; G38

*Keywords:* Executive Compensation, Pay-performance sensitivity, Government control, State-Owned Firm

# **Government Control and Executive Compensation: Evidence from China**

## **1. Introduction**

Executive compensation in state-owned enterprises (SOEs) has received increasing attention from practitioners, academics and regulators in China since economic reforms began over thirty years ago. An important element of the reforms was to delegate government control rights over SOEs partially to firm managers. Although the reduction in government control was expected to improve SOEs' operating efficiency, firm value could be destroyed if managers abuse their increased power to pursue private benefits at the expense of shareholder wealth (Qian, 1995, 1996; Xu et al., 2005). Thus, central to the success of the control reforms is the establishment of effective substitute corporate governance mechanisms to contain the problem of managerial agency costs (Zhu, 1999; Xu et al., 2005). Incentive pay scheme for executives is one such mechanism. Zimmerman (2010, Ch. 4) argues that a change to the decision partition system must be matched by corresponding changes to the performance measurement system and the compensation system.

The level of compensation and the extent of pay-for-performance for executives in China's listed companies have been studied in prior research. Critics of the current practice argue over the appropriate level of pay but generally conclude that the link between pay and firm performance is weak in SOEs (e.g., Firth et al., 2006). These findings raise questions about the effectiveness of SOEs' incentive system. The purpose of this paper is to examine the link between government control and incentive pay schemes. We argue that the rise of incentive pay schemes is a result of increased demand of substitute governance mechanisms when the government releases its direct control of SOEs. Thus, a negative relationship between government control and the level of pay and pay-performance sensitivity is expected.

Using a sample of state-owned listed companies that are ultimately controlled by government agencies but with the control rights exercised to varying degrees through a pyramidal ownership structure (La Porta et al., 1999), we confirm a substitution effect between incentive pay schemes and government control. SOEs under weaker government control (i.e., with more layers in the ownership pyramid) provide managers with stronger incentives to maximize firm value through higher level of pay and higher pay-performance sensitivity than those under stronger government control. These results hold after controlling for other factors known to affect the pyramidal structure.

To examine whether the reduction in government control is associated with increases in pay and pay-performance sensitivity by as much as determined by the (albeit immature) market, we compare SOEs with non-SOEs, i.e., firms ultimately controlled by entities other than government agencies. We find that the level and pay-performance sensitivity of executive compensation in SOEs that remain under strong government control are significantly lower than in non-SOEs. On the other hand, the pay-performance sensitivity of executive compensation in SOEs under weak government control is not significantly different from, and the level of pay is even significantly higher than, those in non-SOEs. These results suggest that while a reduction in government control increases the demand of incentive pay schemes, it could also have resulted in excessive compensation in the sense that pay-performance sensitivity does not increase as much as the level of pay possibly due to increased agency problem (Qian, 1995 and 1996).

It is an empirical question how the relationship between government control and incentive pay schemes would be affected by other corporate governance mechanisms. On the one hand, one could argue that when other corporate governance mechanisms are available,

there is less demand on the use of incentive pay schemes. Thus, a weaker relationship between government control and incentive pay schemes is expected when other governance mechanisms are stronger. On the other hand, one could also argue that with weakened government control, investors may demand the installation of a package of governance mechanisms including incentive pay schemes together with others. Then a stronger relation between government control and incentive pay schemes could be observed when other governance mechanisms are stronger. To examine the issue, we use a number of empirical measures of corporate governance such as independence of the board, separation of the CEO and chairman positions, shareholder participation in annual meetings, and Big-4 auditors. The results are mixed with regard to the effects of these other corporate governance mechanisms. They are, however, consistent with prior studies documenting mixed results on the importance of corporate governance (e.g., Larcker et al., 2007).

Since the primary objective of reduced government control and increased use of incentive pay schemes is to improve the decision making of managers while containing their opportunistic behavior, we expect better firm performance to follow the use of incentive pay schemes. On the other hand, if the incentive schemes are not effective in containing the potentially more serious agency problem (e.g., the effect of perks and excessive pay more than offsets the effect of higher managerial effort), better performance may not ensue. Thus, we also investigate the relationship between compensation schemes and subsequent firm performance. In particular, we divide compensation schemes into four types based on the level of pay (high and low) and per-performance sensitivity (high and low). We find some evidence that weaker government control is associated with better future performance measured by return on assets. This effect, however, is partially subsumed when compensation

schemes are controlled, suggesting that the effect is at least partially achieved through the substitute incentive pay schemes. Further, we find that the “high pay, high sensitivity” type is associated with the best, and the “low pay, low sensitivity” type is associated with the worst, future performance. These results indicate that reduced government control together with substitute incentive schemes is an effective way to improve firm performance.

Our study makes several contributions to the literature. First, our analyses add to the small but growing literature that examines executive compensation using data from the largest transitional economy in the world, China. While there is an extensive literature on executive compensation in the United States (e.g., Jensen and Murphy, 1990; Murphy, 1999), it is not clear whether the conclusions of these studies could generalize to the Chinese market because of ownership differences. A distinct characteristic of listed companies in China is that the majority are ultimately controlled by the government. How and to what extent incentive pay schemes have been used in such a controlled economy is interesting by itself.

Second, we provide additional evidence on the impact of government control, which is frequently criticized for its negative impacts on the effectiveness of firm operations (Boycko, et al. 1996). Unlike previous studies that directly link government control to accounting performance or market valuation in China (Li, 2000; Chang and Wong, 2004; Xu et al., 2005), our paper focuses on executive compensation schemes, which is an important mechanism utilized to ensure the success of the control reforms in SOEs. To the extent that reduced government control is substituted by the use of incentive pay schemes, which in turn motivates managers’ hard work, our findings help illuminate a specific channel through which the reforms improve the overall firm performance or market valuation documented in prior studies (Chang and Wong, 2004; Xu et al., 2005; Fan et al., 2007; He et al., 2009).

Third, our study also yields new insights into the effect of pyramidal ownership structure on firm value. Using data from other countries, most prior studies conclude that the pyramidal structure is “bad” in the sense that it reduces firm value (e.g., Bebchuk et al., 2000; Claessens et al., 2000; Claessens et al., 2002). This finding is generally attributed to the increased agency costs associated with the pyramidal structure. An important difference of our study from others is that the ultimate controlling entity is the government as opposed to families or banks in other countries. In such a setting, the benefit of improved decision making from decentralized control in a pyramidal structure appears to outweigh the cost of additional agency problems, especially when incentive pay schemes are used.

Our results have some policy implications. Executive compensation in SOEs prior to and in the early stage of China’s reforms was capped at a certain level and that payment is related to the civil service scale rather than firm performance (Groves et al., 1994; Qian, 1995). Today, the level of executive compensation and pay-performance sensitivity represent the bulk of managerial incentives for top management in listed SOEs. It is important to examine the nature of incentive pay schemes for evaluating the ongoing reforms and designing future reforms. For example, there has been considerable recent debate over the fast rising level of compensation and lack of a strong relation between compensation and firm performance in SOEs. Our findings suggest that part of the reason for the overall relatively low pay-performance sensitivity is the significant government control over SOEs that is still prevalent in the economy. On the other hand, SOEs under weak government control are more prone to an over-compensation problem. The government needs to balance the delegation of control and regulation of executive compensation in future reforms, and so do shareholders and the board of directors. Our results on future firm performance suggest that, to achieve

desired performance improvement, the use of incentive pay schemes should focus as much on higher pay-performance sensitivity as on higher levels of pay. This is especially relevant to SOEs under weak government control given the result that their level of pay, but not pay-performance sensitivity, is higher than that of non-SOEs.

It is not our intention to generalize our results from China on the relationship between government control and compensation schemes to any other country, especially a developed country such as the United States. However, we do notice that during the current financial crisis, relationship of this nature has been one of the most controversial issues under hot debate in Western countries. Many governments took significant ownership stake in financial institutions and demanded or implemented reforms in executive compensation. Further research with data from these countries is likely to bear fruit.

The rest of the paper is organized as follows. Section 2 provides the institutional background in China. Section 3 describes the sample and main variables used. Section 4 discusses the empirical results. Section 5 concludes the paper.

## **2. Institutional background**

### ***2.1. SOE reform to reduce government control***

Before economic reforms began in 1978, China's SOEs were solely state-owned proprietorships directly controlled by industry-specific government agencies. The SOE reforms decentralized business decision rights from government agencies to firm management and expanded enterprise autonomy without a fundamental change in state ownership. With autonomous investment decision rights, SOEs established subsidiaries and joint ventures and operated as business groups to further reduce government control (Qian, 1995).

After the stock markets opened in Shenzhen and Shanghai in 1990 and 1991,

respectively, a large number of SOEs were reorganized as corporations and listed in the stock exchanges. Typically only a relatively small proportion of shares is issued to the public. Almost all these listed companies are ultimately controlled by the government through majority ownership after initial public offerings (IPO). The government control, however, can be either direct or indirect through a pyramidal ownership structure consisting of one or more layers of intermediate corporations (La Porta et al., 1999; Cai, et al., 2008). The ultimate control allows the government to maintain a certain degree of authority in the listed firms over such key issues as top management, investment and labor deployment. In this way the government can intervene in the firms' business to pursue political or social objectives when needed (Boycko et al., 1996; Shleifer and Vishny, 1994, 1998).

While the controlling shares that the government retains are not freely transferable, decentralization is effectively achieved through the pyramidal ownership structure. The intermediate layers in the pyramids linking the government to the listed firms create an information asymmetry between the two (Aghion and Tirole, 1997). As more layers are added, it becomes increasingly more difficult for the government to intervene in the business decisions of the firms either ex ante or ex post. Fan et al. (2007) argue that the pyramidal ownership structure then enables credible decentralization of decision rights from the government to the management of the listed firms. They find that control layers are longer when the listed firms have longer-term goals and are more subject to market and legal disciplines, and when the (local) government faces fewer fiscal and unemployment problems. Following La Porta et al. (1999) and Fan et al. (2007), we measure the extent of government control by the number of intermediate ownership layers connecting the listed SOEs to the source of ultimate control, i.e., government agencies. The larger the number of intermediate

ownership layers, the weaker the government control over a listed firm.

## ***2.2. Executive compensation in SOEs***

Before China's SOE reforms, executive compensation was determined by a manager's rank within the civil service bureaucracy. There was little use of incentive pay schemes to motivate managers to improve profitability, nor were managers allowed to share in the profits generated by the enterprises. Based on data from a survey of SOEs between 1980 and 1989, Groves et al. (1994, 1995) summarized the pay schemes for various levels of management in SOEs during the 1980s. Although these studies report a positive relationship between executive compensation and firm performance, there are differing opinions regarding the effectiveness of pay schemes in general (Qian, 1995; Xu and Wang, 1999).

After the pilot implementation of the annual salary system in 1992, substantive reforms on executive compensation began in the SOEs. Compensation for executives under the annual salary system consists of two parts: a base salary and a bonus. Moreover, listed companies are encouraged to adopt management practices from Western countries that use incentive pay schemes extensively. For example, *The Company Law* enacted in 1993 documents that the shareholders' meeting is the ultimate authority on key decisions, including the appointment of top executives and compensation contracts. *The Code of Corporate Governance for Listed Firms in China* states that management should be competitively selected and that compensation should be linked to firm performance.

Although incentive pay schemes are generally encouraged in SOEs, there exist government imposed constraints that limit the scope of executive compensation as well as the adoption of incentive pay schemes. For example, an act (No. 26 in 1992) issued by the former Ministry of Labor stated that the pay to executives of SOEs should not exceed three times that

of employees in general.<sup>1</sup> Since the control over SOEs was turned to the State Asset Supervision and Administration Commission (SASAC) in 2003, the government further reduced its involvement in setting executive compensation in listed firms. SASAC is responsible for the appointment of and design of compensation contracts for top executives only in listed companies under its direct control. Listed firms under indirect control of SASAC through intermediate corporations have their executive compensation determined by the board of directors with the approval of SASAC. Compared to SASAC officials who have limited relevant industry experience and few skills necessary to make business decisions, the board of directors has stronger incentive and better capability to use performance-based compensation contracts to incentivize executives for value maximization (Chen et al., 2009).

### ***2.3. The relation between government control and incentive pay schemes***

An effective organizational architecture must maintain the balance of a three-legged stool: a decision partition system, a performance measurement system, and a compensation system (Zimmerman, 2010, Ch. 4). Without the partition of decision rights, the organization would not be able to function. However, without proper control, the assigned decision rights could be abused to pursue private benefits. To achieve the control, members of the organization must be measured in areas where they have been assigned the decision rights and expected to perform. Further, to make them care about the performance measures, rewards and punishment must be tied to the measures. The three systems are interrelated to ensure the proper functioning of any organization. When one of them is changed, the other two must be adjusted accordingly to maintain the balance.

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<sup>1</sup> According to Xinhua News reports (20090417), the Ministry of Human Resources and Social Security was preparing a new act that would allow total executive compensation to be ten to twelve times that of employees' compensation.

The evolution of the relationship between government control and executive compensation in China's SOEs could be understood in light of the above three-legged stool concept. Before the establishment of market mechanisms, the government retained most of the decision rights of SOEs as a way to mitigate management agency problems (Qian 1995, 1996; Xu et al. 2005). With strong government control, it was difficult to attribute firm performance to management effort as the government participated significantly in SOEs' operating, investing and financing activities. Managers were measured by how they implemented government designated plans rather than firm profitability. Consequently there was less demand on performance-based pay schemes. While there was a balance between the three systems, such balance with a strong government control component tends to have negative effects on firm performance, hampering the economic growth (Fan, et al., 2007; He, et al., 2009). The prolonged economy-wide operating inefficiency ultimately led to sweeping reforms in China, especially among SOEs.

The reforms on the SOE control rights are a change to the decision partition system. The pyramidal ownership structure reduces direct government control and enables decentralization of the decision rights to managers. To achieve a new level of balance, changes to the performance measurement system and the compensation system are necessary and expected.

There are at least two reasons to expect increased use of incentive pay schemes when the government delegates decision power to firms' managers. First, a new set of checks and balances are needed to mitigate potentially heightened management agency problem and to align management interest with that of shareholders including the government as the largest shareholder. Newly available decision rights allow managers to better utilize their specialty knowledge and respond to changing business situations in a timelier manner. However,

agency problems are also likely to become a more serious concern when managers enjoy more autonomy and have more resources to deploy for private use. Thus, the benefit of improved operational efficiency may not accrue to shareholders without effective substitute corporate governance mechanisms. Incentive pay schemes naturally arise as such a mechanism. While not a first-best solution, performance-based incentive schemes reduce the agency cost when managerial effort is not directly observable (Holmstrom, 1979).

Second, as management gains control over more resources and power over business decision, firms' financial performance reflects more managerial effort and becomes a more informative signal to use in setting executive compensation. The information value of firm performance is particularly large when management has to face the market to maximize profitability instead of merely implementing government-set plans. The informativeness of performance measures is further enhanced by an improved measurement system as China built a modern accounting system in the process of the reforms. The culmination of the efforts was the adoption of International Financial Reporting Standards for publicly listed firms in 2007, not far behind more developed countries. With an actively trading stock market, creation of shareholder value can now also be directly measured from the market price itself, a natural input in a performance-based incentive system.

Incentive pay schemes as a substitute mechanism for weakened government control are likely to manifest in two aspects. First, as more control rights over business decisions shift from the government to management, managers bear higher risk and would demand a risk premium. This implies an overall higher level of compensation. Second, as performance becomes a more informative signal of managerial effort, more compensation weight is expected to be put on performance to induce higher effort and less shirking. This implies

higher pay-performance sensitivity. Although the Chinese government has generally reduced its direct control over SOEs over time, significant variation exists today as the reforms are still an ongoing process. There are other strategic reasons why the Chinese government exerts tight controls over some firms but not others. We expect a negative relationship between government control and the use of incentive pay schemes, in particular, the level of pay and pay-performance sensitivity.

### **3. Sample and descriptive statistics**

The disclosure of total cash compensation of the three highest paid executives in each of China's listed firms has been mandated since 1998. We use the average of the three compensation packages to proxy executive compensation. The reported cash compensation includes base salary, bonuses and commissions, although the allocation of individual components is not disclosed.<sup>2</sup> We obtain the compensation data for all listed companies from the China Stock Market and Accounting Research (CSMAR) database. In line with other studies, we exclude companies in the financial sector. We define listed SOEs as listed companies ultimately controlled by government agencies. Since disclosure of the ultimate controlling body as well as the control structure is required since 2004, our sample covers the period of 2004 to 2007. For analysis of pay-performance sensitivity, we also use the compensation data in 2003 since change in compensation is needed. After further imposing data availability of firms' financials, ownership and market prices and returns, we obtain 3,447 firm-year observations for the SOE sample and 5,178 observations for the sample including non-SOEs. We obtain corporate governance measures from Beijing University's China Center of Economic Research (CCER) database. Requiring availability of corporate

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<sup>2</sup> Compensation in the form of stock and stock options is rare in China.

governance measures reduces the sample by about 10%.

Appendix A provides the definition of variables used in the study. Table 1 provides the summary statistics on the level (*COMP*) and change (*ΔCOMP*) of total cash compensation for the entire sample and for each year. The number of observations reduces from 885 in 2004 to 839 in 2007, indicating that listed SOEs that transferred the ultimate control from government agencies to non-state entities outnumbered the newly listed SOEs in our sample period. This is consistent with an overall trend of privatization of SOEs. The mean (median) compensation for all years is 259,000 (185,000) RMB Yuan, or about US\$35,000 (25,000) based on the exchange rate at the end of 2007. The mean (median) compensation increased by 82% (38%) over the four-year period, although the level is still much lower than that in developed countries.<sup>3</sup> The mean (median) annual increase in compensation is 41,000 (17,000) RMB Yuan, or about US\$5,600 (2,300). The rate of increase from 2006 to 2007 almost doubles that from 2005 to 2006. The rising compensation in SOEs is consistent with executive pay being used as an incentive scheme.

[Insert Table 1 here]

As mentioned earlier, we measure the strength of government control by the number of intermediate layers (*LAYER*) connecting the listed SOEs to the ultimate controlling government agencies in the pyramidal ownership structure. China Security Regulatory Committee (CSRC) Act No. 2 (2004) required all listed companies to disclose information in annual reports about the control chain between the listed companies and the entities that ultimately control them. The entity with ultimate control is defined as the ultimate owner with substantial voting rights in listed companies, either directly or indirectly through a chain of

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<sup>3</sup> For example, Core et al. (1999) report average cash compensation of \$614,000 in the US during the 1980s.

holdings.<sup>4</sup> The entity with ultimate control could be an individual investor, a government agency, or an organization such as a university or labor union. Listed SOEs are those ultimately controlled by government agencies. Other listed companies are regarded as non-SOEs.

We manually collected data on *LAYER* for all listed SOEs from 2004 to 2007. Descriptive statistics on *LAYER* is provided in Table 2. The value of *LAYER* ranges from 1 to 6, with a mean (median) of 2.37 (2). The level of *LAYER* is relatively stable across the years. A total of 2,117 observations (60%) have two layers in the control chain. These are firms that government agencies control through one intermediate corporation, usually the parent group company from which the listed companies are carved out for the purpose of IPO (Xu and Wang, 1999). Firms with three layers form the next largest group (984 observations, or 28%). Government agencies directly control (*LAYER* = 1) only about 5% of the sample firms.

[Insert Table 2 here]

Using the mean of *LAYER* (2.33) as the cutoff point, we divide the sample of listed SOEs into two subsamples: Firms with a lower value are referred to as the strong government control group (2,262 observations), and firms with a higher value are referred to as the weak government control group (1,185 observations). Table 3 presents the summary statistics of the main variables for the two groups along with non-SOEs (1,731 observations) and pair-wise differences between the three groups.

As shown in Table 3 Panel A, the average compensation is 248,000, 283,000 and 272,000 RMB Yuan for the three respective groups, with the weak government control group having the highest compensation. Non-SOEs have an average annual compensation increase of

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<sup>4</sup> See Wang and Xiao (2009) for detailed explanations and examples of the controlling chain between the entity with ultimate control and listed companies.

27,000 RMB Yuan, significantly lower than that of the two SOE groups. Panel B contains variables on firm performance. We measure *ROA* as net income over total assets and *RET* as the market-adjusted abnormal stock returns. We also employ two variables that measure firm performance in absolute terms: change in operating income from the previous year,  $\Delta OI$ ; and change in shareholder wealth,  $\Delta SW$ , calculated as *RET* times the market value of outstanding tradable shares at the beginning of the year. The annual change in shareholder wealth is negative during our sample period for each group because of the bear market that prevailed from 2001 to 2006 in China. Except for  $\Delta SW$ , other variables of firm performance are generally significantly larger for listed SOEs than for non-SOEs. For example, mean annual increase of operating income over all SOEs is 40 million RMB Yuan, twice that of non-SOEs.

Table 3 Panel C provides information on other firm characteristics, including total assets (*TA*, in billions of RMB Yuan), natural logarithm of total assets (*SIZE*), change in *SIZE* ( $\Delta SIZE$ ), financial leverage (*LEV*), controlling shareholders' ownership (*LSH*), and natural logarithm of GDP per capita of the province in which the listed company is located (*GDP*). SOEs are generally larger in size and have lower leverage than non-SOEs. Firm size increases throughout the sample years, but the difference in size changes is not significant across the groups. Ownership is more concentrated in SOEs than in non-SOEs. The controlling shareholder holds an average of 42% of total shares of SOEs, compared to 31% of non-SOEs. The difference in ownership concentration between the two SOE groups is not significant, suggesting that ownership concentration is not an alternative proxy for our measure of government control. Regional differences in economic development are observed, which are likely an important determinant of executive compensation.

[Insert Table 3 here]

## 4. Empirical results

### 4.1. Government control and level of executive compensation

As discussed earlier, we expect the level of executive compensation to be negatively related to strength of government control as managers assume higher responsibility and higher risk when the government releases the control. We use the following model to control for other factors related to the compensation level:

$$\ln(\text{COMP}) = \beta_0 + \beta_1 \text{Perf} + \beta_2 \text{Gov\_control} + \beta_3 \text{Controls} + \varepsilon \quad (1)$$

where  $\ln(\text{COMP})$  is the natural logarithm of total cash compensation;  $\text{Perf}$  is firm performance measured by  $\text{ROA}$  or  $\text{RET}$ ;  $\text{Gov\_control}$  is measured by  $\text{LAYER}$  and an indicator variable  $\text{D\_CTRL}$  that is equal to 1 if  $\text{LAYER}$  is above the sample mean and 0 otherwise. As a larger value of  $\text{LAYER}$  or  $\text{D\_CTRL}$  corresponds to weaker government control, we expect  $\beta_2$  to be positive.

Model (1) contains a number of control variables. Lagged firm performance ( $\text{LROA}$  and  $\text{LRET}$ ) is included since good performance in the previous year may lead to rewards over several years. We control for firm size ( $\text{SIZE}$ ) because larger firms are expected to have higher levels of executive compensation (Murphy, 1999). Since debt holders have the incentive to monitor management, thereby avoiding excessive compensation, we include leverage ( $\text{LEV}$ ) as a control variable. Controlling shareholders can exert an influence on listed companies through various ways such as dominant seats on the board and frequent transactions between listed companies and the controlling shareholders' groups. We expect controlling shareholders with greater ownership ( $\text{LSH}$ ) to get more involved in firms' activities and rely less on managerial effort, and thus provide lower levels of executive

compensation.<sup>5</sup> In regions with higher per-capita GDP (*GDP*), managers are expected to be more generously compensated.<sup>6</sup> Finally, we control for year and industry fixed effects using dummy variables for individual years and for industries classified by the guideline of the CSRC.

Table 4 Panel A reports the regression results for Model (1) using SOE observations. Coefficients for year and industry dummies are omitted for brevity. In columns 1 and 2 where firm performance measured by *ROA*, the coefficients on *LAYER* and *D\_CTRL* are both positive and significant at the 0.01 level. The results are similar in columns 3 and 4 where firm performance is measured by *RET*. These results are consistent with the prediction that the level of executive compensation increases as the government delegates more control rights to managers. The coefficient on *D\_CTRL* suggests that, *ceteris paribus*, the weak government control group has a compensation level higher than that of the strong government control group by about 0.13 in logarithm measure, or by 13.8% ( $= \exp(0.13) - 1$ ) in RMB Yuan.<sup>7</sup> We also find that firm performance, size and regional economic development have positive and significant impacts on the level of executive compensation, while ownership concentration of the controlling shareholders has a negative impact. Financial leverage is significant only when firm performance is measured by *RET*.

[Insert Table 4 here]

In Table 4 Panel B, we compare the level of executive compensation between listed SOEs and non-SOEs based on modified Model (1) and including non-SOE observations in the

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<sup>5</sup> Note that our main interest is that, for given levels of controlling shareholders' ownership, the way the controlling rights are exercised is related to the level of compensation. As an alternative control, we also use the cash flow rights of the controlling shareholders' ownership. The results here and elsewhere are not qualitatively affected.

<sup>6</sup> We also use dummy variables for provincial areas to capture regional differences. Our main results remain qualitatively the same.

<sup>7</sup> For  $\ln(y_1) - \ln(y_2) = b = \ln(y_1/y_2)$ , we have  $y_1/y_2 = \exp(b)$ , or  $(y_1 - y_2)/y_2 = \exp(b) - 1$ .

regressions.  $D\_SOE$  is an indicator variable that takes the value of 1 for SOEs and 0 for non-SOEs. In columns 1 and 3 where SOEs are considered as one group, the coefficient on  $D\_SOE$  is small and insignificant, suggesting that on average there is little difference in compensation levels between SOEs and non-SOEs. In columns 2 and 4, we add  $D\_CTRL$  as an additional variable. In this case, the coefficient on  $D\_SOE$  captures the compensation difference between non-SOEs SOEs and under strong government control, and the sum of coefficients on  $D\_SOE$  and  $D\_CTRL$  captures the compensation difference between non-SOEs and SOEs under weak government control. Significant compensation differences between SOEs and non-SOEs appear. In particular, *ceteris paribus*, the level of executive compensation in SOEs under strong government control is lower than that of non-SOEs by about 0.05 in logarithm measure, or by 5% ( $=\exp(-0.05) - 1$ ) in RMB Yuan. Executives of SOEs under weak government control, on the other hand, enjoy a compensation premium of about 0.075 in logarithm measure, or by 8% ( $=\exp(0.075) - 1$ ) in RMB Yuan, relative to executives of non-SOEs. Both differences are significant at the 0.05 level. If executive compensation in non-SOEs reflects the market compensation level, the results here suggest that recent concerns over excessive executive compensation in SOEs are likely to pertain more to those under weak government control.

#### ***4.2. Government control and pay-performance sensitivity***

When the government reduces its interference in firms' business decisions, firm performance would be a more informative signal of managerial effort. Performance-sensitive compensation schemes are likely to be used more to motivate managerial effort. Thus, we expect pay-performance sensitivity to be negatively related to government control. Following Jensen and Murphy (1990), we use the following model to test the prediction:

$$\begin{aligned} \Delta COMP = & \beta_0 + \beta_1 \Delta Perf + \beta_2 Gov\_control + \beta_3 \Delta Perf * Gov\_control \\ & + \beta_4 Controls + \varepsilon \end{aligned} \quad (2)$$

where  $\Delta COMP$  is the change in executive compensation and  $\Delta Perf$  is the change in firm performance measured by  $\Delta OI$  and  $\Delta SW$ .  $Gov\_control$  is similarly measured by  $LAYER$  and  $D\_CTRL$  as in Model (1). While  $\beta_1$  captures the pay-performance sensitivity in the baseline case of  $Gov\_control = 0$ ,  $\beta_3$  on the interaction variable of  $Gov\_control$  and  $\Delta Perf$  captures the effect of government control on pay-performance sensitivity. We expect  $\beta_3$  to be positive. The choice of control variables is the same as in Model (1) except that the variables other than  $GDP$  are measured in changes.<sup>8</sup>

Regression results for Model (2) using SOE observations are presented in Table 5 Panel A. The control variables indicate that management compensation is more likely to increase with better past performance improvement and larger increases in firm size, and in more developed regions. In columns 1 and 2 where firm performance is measured by  $\Delta OI$ , the coefficients on the interaction of  $\Delta OI$  with  $LAYER$  and  $D\_CTRL$  are both positive and at least significant at the 0.10 level (one-sided). In particular, the pay-performance sensitivity for the weak government control group is higher by 70% ( $=0.039/0.055$ ) than that for the strong government control group (column 2). For every 1 million RMB Yuan change of operating income, executive compensation is affected by 55 RMB Yuan when the government control is strong, and by another 39 RMB Yuan when the government control is weak. Considering that the standard deviation of  $\Delta OI$  is about 200 million RMB Yuan (Table 3), one standard deviation difference in the change of operating income is associated with a compensation difference of about 7,800 RMB Yuan between the two groups.

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<sup>8</sup> We also use change in  $GDP$  in the model and find it insignificant, as opposed to the significant positive effect of  $GDP$  in Tables 6 and 7. It appears that managers in more developed regions are more likely to have their compensation increased, but the economic growth itself does not directly affect the compensation change.

The results are similar in columns 3 and 4 where firm performance is measured by  $\Delta SW$ . The coefficients on  $\Delta SW \times LAYER$  and  $\Delta SW \times D\_CTRL$  are both significant at the 0.05 level. While the pay does not appear to be sensitive to the change of shareholder wealth for the strong government control group, it is significantly so for the weak government control group (column 4). One standard deviation difference in the change of shareholder wealth (about 2,000 million RMB Yuan, Table 3) is associated with a compensation difference of about 10,000 RMB Yuan between the two groups. While the amount is relatively small, it is consistent with the small pay-performance sensitivity documented in other countries (e.g., Jensen and Murphy, 1990).

[Insert Table 5 here]

In Table 5 Panel B, we compare the pay-performance sensitivity of SOEs and non-SOEs. We modify Model (2) by including non-SOE observations and introducing the indicator variable  $D\_SOE$  and its interaction with firm performance. The negative coefficient on  $\Delta OI \times D\_SOE$  in column 1 indicates that the average pay-performance sensitivity for SOEs is significantly lower than that for non-SOEs. Pay-performance sensitive is insignificant for both SOEs and non-SOEs when performance is measured by  $\Delta SW$  in column 3. In columns 2 and 4 we introduce  $D\_CTRL$  to capture the difference between SOEs under strong and weak government control. In column 2, the coefficient on  $\Delta OI \times D\_SOE$  is significantly negative, but the sum of the coefficients on  $\Delta OI \times D\_SOE$  and  $\Delta OI \times D\_CTRL$  is insignificant (-0.021, t-stat = -0.88). This indicates that pay-performance sensitivity is comparable between SOEs under weak government control and non-SOEs, and is significantly lower only for SOEs under strong government control. The results are slightly weaker with change in shareholder wealth as the performance measure in column 4. Individual pay-performance sensitivity is not

significant for any of the three groups, but the difference between SOEs under strong and weak government control is significant, with higher sensitivity for those under weak control.

Overall, the results in Table 5 are consistent with the prediction that pay-performance sensitivity of SOEs increases as the government reduces direct control of the firms. For the weak government control group, the pay-performance sensitivity is comparable to that of non-SOEs, a level possibly implied by the market.

### ***4.3. Additional Tests***

#### ***4.3.1. Controlling for factors associated with government control***

Fan et al. (2007) find a number of factors associated with the length of ownership layers, consistent with their hypothesis that the pyramidal structure is a mechanism to decentralize government control rights. One could argue that the results we document above are due to the underlying factors rather than government control *per se*. For example, a more capable CEO may be given more decision power; a more capable CEO also deserves higher pay and pay-performance sensitivity. Thus, the driving force of the incentive pay schemes could be CEO capability instead of decentralized control itself. To address this issue, we adopt a two-stage procedure: in the first stage, we regress *LAYER* on the associated factors; in the second-stage we use the residuals from the first-stage regression and re-estimate Models (1) and (2). In this way, we control away the effects of the factors underlying government control.

The first-stage regression results are reported in Table 6. The choice of explanatory variables follows that of Fan et al. (2007) except that we also include proxies for CEO ability: *CEO\_AGE*.<sup>9</sup> The results indicate that older CEOs are actually under tighter control. One

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<sup>9</sup> At this moment we are only able to obtain data on CEO age. We are collecting data on other measures of CEO ability such as educational background, professional certificates, and business experience. We expect to build these variables into the model in our future revisions.

possible explanation is that older CEOs are more likely to have been promoted within the bureaucratic system.<sup>10</sup> Their business experience and ability to run a firm in a market-driven economy is not superior. It is the newer and younger generation of executives that grew up with China economic reforms (now in their 40s and early 50s) that is more capable of running businesses in today's markets. The marketization index (*MKTINDEX*) indicates that in regions where markets are more developed, control layers are longer.<sup>11</sup> Fan et al. (2007) argue that it is because in these regions the government can delegate the disciplining and monitoring of managers to the market and the legal system. Other variables suggest that control layers are longer when firms are smaller (*SIZE*), when government ownership is larger (*LSH*), and when firms have more growth opportunities (*MB*), similar to the findings of Fan et al. (2007). Some industry effects are also observed (not reported)

[Insert Table 6 here]

It can be noted that although many variables are significant in Table 6, the overall explanatory power is rather small, with an adjusted  $R^2$  of only 0.05. This is consistent with the notion that the economic reforms in China can be largely viewed as an exogenous shock to the old system rather than driven by known existing factors. Given that most of the variation in the control layers is unexplained and thereby captured by the residuals, it is not surprising that using the residuals in the second stage for Models (1) and (2) yields results qualitatively similar to those reported earlier. In particular, larger unpredicted layers are associated with higher levels of compensation (Table 7 Panel A) and higher pay-performance sensitivity when performance is measured by shareholder wealth change (Table 7 Panel B). Thus, our main

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<sup>10</sup> While increasingly less frequent, it is not uncommon in China that a high-level government official is sent to be the CEO of an SOE when he/she is near retirement. This is regarded as a way to compensate the person for his/her less-well paid lifetime service in the government.

<sup>11</sup> Marketization index is developed by Fan and Wang (2003) to capture regional differences in the development of markets in China. Factors incorporated in the index include local government intervention, development of non-state business, product market competition in terms of regional trade barriers, foreign direct investment, and legal environment.

results hold after controlling for factors associated with the strength of government control.

[Insert Table 7 here]

#### ***4.3.2. The effect of other corporate governance mechanisms***

Table 8 reports the results on the impact of other corporate governance mechanisms on the negative relationship between government control and incentive pay schemes. As we argued earlier, on the one hand, the presence of strong other governance mechanisms could reduce the need to use incentive pay schemes. On the one hand, other governance mechanisms could be strengthened together with the use of incentive pay schemes to substitute reduced government control. Thus, the impact of other governance mechanisms is an empirical question.

[Insert Table 8 here]

We use four empirical proxies for other corporate governance mechanisms: percentage of independent directors on the board, whether CEO also serves as chairman of the board, percentage of shareholders participating in annual meetings, and whether the firm is audited by a Big-4 auditor. We separate the SOE sample into two subsamples based on the strength of these other governance mechanisms and re-estimate Models (1) and (2) for each subsample.<sup>12</sup>

The results are rather mixed. In Table 8 Panel A, compensation level increase in the number of control layers more when there are more independent directors, when CEO and chairman positions are separated, and when there is wider shareholder participation in annual meetings (i.e., stronger governance). However, there is no discernible difference whether the firm is audited by a Big-4 auditor or non-Big-4 auditor. In Panel B, pay-performance sensitivity based on  $\Delta SW$  increases in the number of layers more when the firm is audited by a

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<sup>12</sup> CSRC requires that the board must have at least one third of directors independent. Many firms exactly meet this requirement. Thus, the two subsamples based on board independence are not equal in size.

non-Big 4 auditor (i.e., weaker governance), but also when CEO is not the chairman and when shareholders participate more in annual meetings (i.e., stronger governance). Independent directors do not seem to significantly affect pay-performance sensitivity. The results using  $D\_CTRL$  or using  $\Delta OI$  as the performance measure are qualitatively similar.

If we have to weigh the above results, they seem to tilt a bit toward a stronger association between government control and incentive pay schemes when other corporate governance mechanisms are relatively strong, although we are reluctant to conclude on this. Such mixed findings are consistent with similarly mixed findings of Larcker et al. (2007), who call for the use of more sophisticated structural models to study the effect of corporate governance.

#### **4.4. Incentive pay schemes and subsequent firm performance**

An objective of China's SOE reforms is to improve the operational efficiency of SOEs. Not only are managers entrusted with more power for business decisions, but they are also motivated to work harder by the incentive pay schemes. On the other hand, if the incentive pay schemes are not effective in containing their opportunistic behavior now that they have more power to abuse, or they even use the incentive pay schemes to obtain excessive compensation for themselves, it is not clear whether better performance would ensue. To examine the link between government control, incentive pay schemes and subsequent firm performance, we use the following model:

$$ROA_{t+i} = \beta_0 + \beta_1 Gov\_control + \beta_2 D\_HPLS + \beta_3 D\_LPHS + \beta_4 D\_LPLS + \beta_5 ROA_t + \beta_6 Controls + \varepsilon \quad (3)$$

In Model (3), the dependent variable is the return on assets in the subsequent three years ( $i = 1, 2, 3$ ). To test on the effects of incentive pay schemes, we divide firms into four groups based on the level of pay (high and low, or *HP* and *LP*) and pay-performance sensitivity (high

and low, or *HS* and *LS*). For each firm year, we measure the level of pay by total cash compensation (*COMP*) scaled by total assets (i.e., firm size-controlled level of pay),<sup>13</sup> and pay-performance sensitivity by change in compensation ( $\Delta COMP$ ) relative to change in operating income ( $\Delta OI$ ).<sup>14</sup> Compensation schemes are thus classified into four types: *HPHS*, *HPLS*, *LPHS*, and *LPLS*. Variables *D\_HPLS*, *D\_LPHS* and *D\_LPLS* in Model (3) are indicator variables for compensation schemes of the corresponding type. *HPHS* is treated as the baseline type and its indicator variable is dropped from the model. Coefficients on the indicator variables in the model measure the incremental impact of the compensation type relative to the baseline type.

To provide corroborating evidence that the above classification of compensation schemes is consistent with the earlier results, Table 9 Panel A presents the distribution of firms across the four types. For the overall sample, relatively more firms fall into the *HPHS* and *LPLS* types. When we separate the sample based on the strength of government control, firms under weak government gear more toward the *HPHS* type while those under strong government control gear more toward the *LPLS* type. This is consistent with the substitution effect between government control and incentive pay schemes documented earlier.

[Insert Table 9 here]

The regression results for Model (3) using *LAYER* and *D\_CTRL* for *Gov\_control* are reported in Table 9 Panels B and C, respectively. In Panel B columns 1, 3, and 5, we consider the effect of *LAYER* but not compensation schemes. The coefficient on *LAYER* is positive for all three years and significant in years  $t+1$  and  $t+2$ . That is, weaker government control is

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<sup>13</sup> We repeat the analyses without controlling for firm size. The results remain qualitatively the same.

<sup>14</sup> Because of limited data for each firm, we are not able to use the regression technique to obtain firm-specific pay-performance sensitivity measures. We also use change in shareholder wealth as the deflator and obtain qualitatively similar results.

associated with better future performance. This suggests that by giving managers more power, the benefit of better business decisions is likely to outweigh the cost of the potentially more serious agency problems.

We then include the indicator variables for the various compensation scheme types in columns 2, 4, and 6. Several points are in order. First, the effect of government control is partially subsumed. Not only does the coefficient on *LAYER* become smaller in all three years, it becomes even insignificant in year  $t+2$ . This indicates that the effect of government control of future performance is partially achieved through the substitute incentive pay schemes. Second, of the four incentive pay scheme types, “high pay, high sensitivity” type is associated with the highest future performance as the coefficients on *D\_HPLS*, *D\_LPHS* and *D\_LPLS* are all negative and generally significant. The “low pay, low sensitivity” type is associated with the worst future performance, with *ROA* lower than that of the “high pay, high sensitivity” type by more than 2% in each of the subsequent three years. Third, incentive pay schemes appear to have longer-lasting impacts on future performance than reduced government control *per se*. Performance differences across the incentive pay scheme types are observed even in year  $t+3$ , whereas the effect of government control is observed only in the first two years. Fourth, the negative impact of the “high pay, low sensitivity” type relative to the “high pay, high sensitivity” type is marginally significant in years  $t+1$  and  $t+2$  but doubles in  $t+3$ , suggesting that excessive payment without a strong tie to performance has a negative impact in the long run.

The results in Panel C with *D\_CTRL* for *Gov\_control* are qualitatively similar. *D\_CTRL* is significantly associated with future performance only in year  $t+1$ , but the significance is subsumed once incentive pay schemes are considered. The “high pay, high sensitivity” type

has long-run and the largest impact on future performance compared to other types.

Overall, the results in Table 9 suggest that the positive effect of reduced government control on firm performance examined in prior studies (e.g., Li, 2000; Chang and Wong, 2004; and Xu et al., 2005) is partially attributable to the substitute incentive pay schemes. Although reduced government control could possibly lead to more serious agency problems such as perks and excessive compensation of managers, firms under strong government control could sacrifice even more due to poor decision making and a lack of incentives to motivate managers. When reduced government control is combined with incentive pay schemes, especially “high pay, high sensitivity” ones, agency costs could be contained and future performance improved.

## **5. Conclusion**

We argue in this paper that incentive pay schemes in China’s listed SOEs are likely to have arisen in response to increased demand on stronger corporate governance mechanisms when the Chinese government reduced its direct control of the SOEs as part of the economic reforms. Increased management power could lead to better business decisions but also leave larger room for managerial agency problems. Incentive pay scheme could be an effective way to contain managers’ opportunistic behavior and to motivate them to work hard.

Our empirical results are consistent with a substitution effect between government control and incentive pay schemes. The level of pay and pay-performance sensitivity significantly increase as the government allows longer intermediate ownership layers to the SOEs it ultimately controls, i.e., reduces its direct control of the SOEs. Using non-SOEs as the benchmark, listed SOEs that remain under stronger government control have significantly lower level of pay and pay-performance sensitivity. Those under weaker government control

have comparable pay-performance sensitivity and even higher levels of pay. Further, weaker government control is found to be associated with higher future firm performance. However, such effect is at least partially attributable to the substitute incentive pay schemes. “High pay, high sensitivity” compensation schemes have long-run and the most positive impact on future performance compared to other compensation schemes.

Economic reforms in China are still an ongoing process. Further decentralizing government control appears to be the direction that is likely to occur. Our results suggest that reducing the direct involvement in firms’ business activities while allowing the government to retain the ultimate control of SOEs is likely to lead to better firm performance, especially when substituted with incentive pay schemes. Executive compensation in SOEs has received more stringent public scrutiny in recent years. Much of the controversy focuses on the rising level of compensation and a lack of strong tie to performance. Our study suggests a possible tendency of over-compensation when government control is weakened. What appears to be important is to strengthen the tie between pay and performance. When setting compensation policies, the government should consider its involvement in the firms’ business activities rather than simply issuing a “compensation limit” for all firms.

Western countries such as the United States face similar issues during the current financial crisis when the governments took a significant ownership stake in the financial institutions and had to deal with public outcries over apparent abuse of compensation schemes in the past. Not only could these governments get involved in firms’ business activities, they are now also in a position to regulate the compensation policies. While we do not want to generalize inferences from China to these countries, further research on these issues will be of interest to practitioners, academics, and policy-makers.

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**Appendix A: Definition of variables (for each firm year)**

Variable	Definition
<i>COMP</i>	Average cash compensation of the three highest paid executives, in thousands of RMB Yuan.
$\Delta$ <i>COMP</i>	Change in <i>COMP</i> from the previous year.
<i>D_SOE</i>	Indicator variable that equals 1 if the ultimate controlling entity of the firm is a government agency and 0 otherwise.
<i>LAYER</i>	Number of intermediate ownership chains connecting the listed companies to government agencies.
<i>D_CTRL</i>	Indicator variable that equals 1 if <i>LAYER</i> is greater than the sample mean and 0 otherwise.
<i>ROA (LROA)</i>	(lagged) Return on total assets, defined as net income divided by total assets.
<i>RET (LRET)</i>	(lagged) Market-adjusted abnormal stock return.
<i>ΔOI (LΔOI)</i>	(lagged) Change in operating income, in millions of RMB Yuan, from the previous year.
<i>ΔSW (LΔSW)</i>	(lagged) Change in shareholder wealth, calculated <i>RET</i> times the market value of outstanding tradable shares at the beginning of the year, in millions of Yuan.
<i>SIZE</i>	Natural logarithm of total assets in RMB Yuan
$\Delta$ <i>SIZE</i>	Change in total assets, in billions of RMB Yuan, from the previous year.
<i>LEV</i>	Financial leverage, calculated as total liabilities divided by total assets.
$\Delta$ <i>LEV</i>	Change in financial leverage, from the previous year.
<i>LSH</i>	Controlling shareholders' ownership, calculated as the percentage of shares held by the controlling shareholder.
$\Delta$ <i>LSH</i>	Change in controlling shareholders' ownership from the previous year.
<i>GDP</i>	Measured by the natural logarithm of GDP per capita of the province in which listed company is located.
<i>CEO_AGE</i>	Age of CEO
<i>MKTINDEX</i>	A marketization index obtained from Fan and Wang (2003) measuring the maturity of regional markets in which listed firm is located.
<i>MB</i>	Market-to-book ratio
<i>D_HPHS</i> , <i>D_HPLS</i> , <i>D_LPHS</i> , <i>D_LPLS</i>	Indicator variables for firms with high pay and high pay-performance sensitivity ( <i>HPHS</i> ), with high pay and low pay-performance sensitivity ( <i>HPLS</i> ), with low pay and high pay-performance sensitivity ( <i>LPHS</i> ), and with low pay and low pay-performance sensitivity ( <i>LPLS</i> ), which take the value of 1 if the firm falls into the corresponding group and 0 otherwise. Level of pay is measured as <i>COMP</i> scaled by total assets; pay-performance sensitivity is measured as $\Delta$ <i>COMP</i> relative to $\Delta$ <i>OI</i> . High and low are measured relative to the sample mean.
<i>Year dummies</i>	Year dummy variables that equal 1 if an observation falls into a given year and 0 otherwise.
<i>IND dummies</i>	Industry dummy variables that equal 1 if an observation falls into a given industry and 0 otherwise.

**Table 1****Summary statistics of executive compensation in state-owned firms**

	Total	2004	2005	2006	2007
Obs.	3447	885	880	843	839
<i>COMP</i> (000s RMB Yuan)					
Mean	259	204	213	258	372
STD	306	213	204	255	462
25%	102	84	93	108	138
Median	185	150	162	198	255
75%	315	252	270	327	414
$\Delta$ <i>COMP</i> (000s RMB Yuan)					
Mean	41	40	15	35	74
STD	112	96	105	97	136
25%	-1	0	-16	0	2
Median	17	17	7	15	36
75%	65	55	47	62	106

See Appendix A for definitions of *COMP* and  $\Delta$ *COMP*.

**Table 2****Frequency distribution at different levels of *LAYER***

		Total	2004	2005	2006	2007
<i>LAYER=1</i>	Obs.	189	55	53	45	36
	(%)	(5.38)	(6.06)	(5.90)	(5.17)	(4.29)
<i>LAYER=2</i>	Obs.	2117	562	544	514	497
	(%)	(60.21)	(61.96)	(60.58)	(59.01)	(59.17)
<i>LAYER=3</i>	Obs.	984	238	245	253	248
	(%)	(27.99)	(26.24)	(27.28)	(29.05)	(29.52)
<i>LAYER=4</i>	Obs.	175	39	43	46	47
	(%)	(4.98)	(4.30)	(4.79)	(5.28)	(5.60)
<i>LAYER=5</i>	Obs.	37	10	9	10	8
	(%)	(1.05)	(1.10)	(1.00)	(1.15)	(0.95)
<i>LAYER=6</i>	Obs.	14	3	4	3	4
	(%)	(0.37)	(0.33)	(0.45)	(0.34)	(0.36)
Total	Obs.	3,516	907	898	871	840
	(%)	(100)	(100)	(100)	(100)	(100)
Sample Mean		2.37	2.33	2.36	2.39	2.41

See Appendix A for definition of *LAYER*. Percentage relative to the entire sample is in parentheses.

**Table 3**  
**Summary statistics of main variables for SOEs under strong and weak government control and non-SOEs**

	SOEs									Non-SOEs			t-statistics on the difference in means		
	Total			Strong Gov Control ( <i>D_CTRL</i> = 0)			Weak Gov Control ( <i>D_CTRL</i> = 1)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(2)-(3)	(2)-(4)	(3)-(4)
Mean	Median	STD	Mean	Median	STD	Mean	Median	STD	Mean	Median	STD	(2)-(3)	(2)-(4)	(3)-(4)	
Panel A: Compensation															
<i>COMP</i> (000s)	261	186	306	248	180	277	283	200	356	272	156	1217	-3.23***	-0.92	0.29
$\Delta$ <i>COMP</i> (000s)	41	17	112	39	17	108	44	18	118	27	8	109	-1.22	3.44***	4.03***
Panel B: Performance															
<i>ROA</i> (%)	2.33	2.74	7.53	2.23	2.63	7.74	2.53	2.89	7.26	-0.04	2.47	12.22	-0.89	7.15***	6.51***
<i>RET</i> (%)	-6.33	-0.21	27.85	-6.62	-5.90	27.84	-5.96	-3.95	28.54	-9.38	-6.16	26.76	-0.48	3.14***	3.28***
$\Delta$ <i>OI</i> (million)	40	10	200	50	10	200	30	10	190	20	10	150	2.84***	4.14***	0.32
$\Delta$ <i>SW</i> (million)	-100	0	2130	-130	-90	1860	-180	-60	1950	-120	-60	830	2.72***	-0.13	-1.10
Panel C: Firm Characteristics															
<i>TA</i> (billion)	5.38	2.04	22.70	6.16	2.14	27.30	3.92	1.84	9.24	2.59	1.14	24.30	4.49***	4.40***	2.08**
<i>SIZE</i>	21.53	21.45	1.03	21.60	21.51	1.04	21.40	21.35	1.03	20.91	20.88	0.99	5.63***	21.39***	12.89***
$\Delta$ <i>SIZE</i> (billion)	1.04	0.13	6.70	1.21	0.14	7.52	0.70	0.12	4.65	0.94	0.05	24.22	0.96	0.52	-0.33
<i>LEV</i> (%)	51.27	52.37	17.71	52.00	53.46	17.64	49.99	50.55	17.97	54.36	55.13	19.10	3.10***	-4.40***	-6.22***
<i>LSH</i> (%)	42.12	41.67	15.87	42.19	40.92	16.00	41.99	42.28	15.64	31.40	28.70	13.65	0.29	22.46***	19.32***
<i>GDP</i>	9.90	9.87	0.64	9.86	9.83	0.62	9.96	9.91	0.66	9.89	9.89	0.60	-4.24***	-1.52	2.83***
Obs.	3447			2262			1185			1731					

\*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels, respectively.

**Table 4**  
**Panel A. Government control and executive compensation level in SOEs**

	Dependent variable = Ln( <i>COMP</i> )			
	(1)	(2)	(3)	(4)
	<i>Perf</i> = <i>ROA</i>		<i>Perf</i> = <i>RET</i>	
<i>INTERCEPT</i>	3.903*** (12.13)	3.979*** (12.46)	2.985*** (9.20)	3.067*** (9.52)
<i>Perf</i>	1.751*** (9.54)	1.759*** (9.59)	0.196*** (4.54)	0.193*** (4.48)
<i>LAYER</i>	0.077*** (4.86)		0.081*** (4.93)	
<i>D_CTRL</i>		0.126*** (5.09)		0.132*** (5.19)
<i>LPerf</i>	1.703*** (8.85)	1.696*** (8.82)	0.211*** (5.06)	0.214*** (5.13)
<i>SIZE</i>	0.264*** (19.72)	0.267*** (19.92)	0.314*** (23.54)	0.318*** (23.76)
<i>LEV</i>	0.001 (0.02)	0.011 (0.15)	-0.451*** (-6.32)	-0.440*** (-6.18)
<i>LSH</i>	-0.652*** (-8.34)	-0.645*** (-8.26)	-0.581*** (-7.20)	-0.572*** (-7.11)
<i>GDP</i>	0.274*** (13.82)	0.273*** (13.76)	0.291*** (14.17)	0.289*** (14.09)
Observations	3447	3447	3447	3447
Adjusted $R^2$	0.37	0.37	0.33	0.34
F	102.403	103.260	85.382	86.172

**Table 4 – Continued**  
**Panel B. Comparison of executive compensation level between SOEs and non-SOEs**

	Dependent variable = Ln( <i>COMP</i> )			
	(1)	(2)	(3)	(4)
	<i>Perf</i> = <i>ROA</i>		<i>Perf</i> = <i>RET</i>	
<i>INTERCEPT</i>	3.240*** (12.17)	3.186*** (11.98)	2.568*** (9.73)	2.520*** (9.57)
<i>Perf</i>	1.108*** (8.98)	1.098*** (8.92)	0.204*** (5.55)	0.202*** (5.51)
<i>D_SOE</i>	-0.002 (-0.11)	-0.048** (-2.00)	-0.006 (-0.27)	-0.054** (-2.17)
<i>D_CTRL</i>		0.123*** (4.88)		0.128*** (4.98)
<i>LPerf</i>	1.281*** (9.50)	1.266*** (9.41)	0.230*** (6.53)	0.225*** (6.41)
<i>SIZE</i>	0.283*** (25.06)	0.288*** (25.49)	0.321*** (29.21)	0.327*** (29.64)
<i>LEV</i>	-0.070 (-1.12)	-0.068 (-1.07)	-0.429*** (-7.44)	-0.423*** (-7.36)
<i>LSH</i>	-0.576*** (-8.45)	-0.583*** (-8.57)	-0.540*** (-7.77)	-0.548*** (-7.90)
<i>GDP</i>	0.306*** (18.13)	0.299*** (17.74)	0.318*** (18.50)	0.311*** (18.08)
Observations	5178	5178	5178	5178
Adjusted <i>R</i> <sup>2</sup>	0.34	0.34	0.32	0.32
F	132.235	127.406	117.448	113.376

See Appendix A for variable definitions. Coefficients on year and industry dummies included in the models are not reported. T-statistics are provided in parentheses. \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels, respectively.

**Table 5**  
**Panel A. Government control and pay-performance sensitivity of SOEs**

	Dependent variable = $\Delta COMP$			
	(1)	(2)	(3)	(4)
	$\Delta Perf = \Delta OI$		$\Delta Perf = \Delta SW$	
<i>INTERCEPT</i>	-0.770** (-2.27)	-0.718** (-2.12)	-0.885** (-2.47)	-0.830** (-2.33)
$\Delta Perf$	0.007 (0.18)	0.055*** (4.33)	-0.007 (-1.60)	0.000 (0.28)
<i>LAYER</i>	0.027 (1.04)		0.030 (1.11)	
<i>D_CTRL</i>		0.047 (1.19)		0.057 (1.35)
$\Delta Perf * LAYER$	0.025 (1.60)		0.004** (2.18)	
$\Delta Perf * D\_CTRL$		0.039* (1.73)		0.005** (1.99)
$L\Delta Perf$	0.071*** (6.21)	0.072*** (6.24)	0.002** (2.24)	0.002** (2.29)
$\Delta SIZE$	0.001** (2.46)	0.001** (2.49)	0.002*** (3.27)	0.002*** (3.37)
$\Delta LEV$	0.003 (0.02)	0.004 (0.02)	-0.317 (-1.53)	-0.327 (-1.58)
$\Delta LSH$	0.337 (0.96)	0.340 (0.97)	0.611* (1.66)	0.605* (1.65)
<i>GDP</i>	0.115*** (3.62)	0.114*** (3.61)	0.131*** (3.93)	0.131*** (3.91)
Observations	3447	3447	3447	3447
Adjusted $R^2$	0.06	0.06	0.05	0.05
F	11.066	11.147	8.166	8.149

**Table 5 – Continued**

**Panel B. Comparison of pay-performance sensitivity between SOEs and non-SOEs**

	Dependent variable = $\Delta COMP$			
	(1)	(2)	(3)	(4)
	$\Delta Perf = \Delta OI$		$\Delta Perf = \Delta SW$	
<i>INTERCEPT</i>	-0.936*** (-3.53)	-0.916*** (-3.45)	-0.947*** (-3.38)	-0.942*** (-3.36)
$\Delta Perf$	0.116*** (6.12)	0.116*** (6.12)	0.005 (1.19)	0.005 (1.19)
<i>D_SOE</i>	0.138*** (4.21)	0.122*** (3.42)	0.135*** (3.86)	0.115*** (3.03)
<i>D_CTRL</i>		0.044 (1.12)		0.055 (1.34)
$\Delta Perf * D\_SOE$	-0.051** (-2.43)	-0.062*** (-2.83)	-0.003 (-0.74)	-0.005 (-1.14)
$\Delta Perf * D\_CTRL$		0.041* (1.83)		0.006** (2.21)
$L\Delta Perf$	0.064*** (6.35)	0.065*** (6.49)	0.002** (2.35)	0.002** (2.48)
$\Delta SIZE$	0.002*** (3.21)	0.002*** (3.32)	0.002*** (4.10)	0.002*** (4.47)
$\Delta LEV$	-0.088 (-0.66)	-0.090 (-0.68)	-0.418*** (-3.01)	-0.423*** (-3.05)
$\Delta LSH$	0.549* (1.95)	0.547* (1.95)	0.830*** (2.82)	0.807*** (2.74)
<i>GDP</i>	0.119*** (4.69)	0.117*** (4.59)	0.127*** (4.74)	0.127*** (4.70)
Observations	5178	5178	5178	5178
Adjusted $R^2$	0.06	0.06	0.05	0.05
F	18.121	16.669	12.787	11.871

See Appendix A for variable definitions. Coefficients on year and industry dummies included in the models are not reported. T-statistics are provided in parentheses. \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels, respectively.

**Table 6**  
**Factors associated with government control layers**

Dependent Variable = <i>LAYER</i>	
<i>Constant</i>	3.410*** (11.07)
<i>CEO_AGE</i>	-0.005** (-2.27)
<i>MKTINDEX</i>	0.020*** (3.88)
<i>SIZE</i>	-0.050*** (-3.46)
<i>LEV</i>	-0.081 (-1.03)
<i>LSH</i>	0.253*** (2.86)
<i>MB</i>	0.012*** (2.73)
Observations	3138
Adjusted $R^2$	0.05
F	9.490

See Appendix A for variable definitions. Coefficients on year and industry dummies included in the model are not reported. T-statistics are provided in parentheses. \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels, respectively.

**Table 7****Panel A. The relationship between government control and executive compensation level after controlling for factors associated with government control layers**

	Dependent variable = Ln( <i>COMP</i> )			
	<i>Perf=ROA</i>		<i>Perf=RET</i>	
<i>INTERCEPT</i>	4.450*** (13.65)	4.077*** (12.76)	3.318*** (9.92)	3.210*** (9.77)
<i>Perf</i>	1.925*** (10.18)	1.772*** (9.64)	0.055*** (3.11)	0.054*** (3.15)
<i>LAYER_Resid</i>	0.066*** (4.09)		0.070*** (4.16)	
<i>D_LAYER_Resid</i>		0.053** (2.25)		0.059** (2.41)
<i>LPerf</i>	1.869*** (9.36)	1.711*** (8.87)	0.143*** (6.54)	0.145*** (6.73)
<i>SIZE</i>	0.239*** (17.34)	0.258*** (19.30)	0.300*** (21.79)	0.304*** (22.58)
<i>LEV</i>	0.063 (0.80)	0.000 (0.00)	-0.489*** (-6.68)	-0.497*** (-6.94)
<i>LSH</i>	-0.593*** (-7.45)	-0.627*** (-8.00)	-0.507*** (-6.08)	-0.531*** (-6.50)
<i>GDP</i>	0.287*** (14.32)	0.285*** (14.38)	0.291*** (13.84)	0.291*** (14.09)
Observations	3138	3138	3138	3138
Adjusted $R^2$	0.38	0.37	0.34	0.34
F	99.522	101.504	81.089	84.086

**Table 7 – Continued**

**Panel B. The relationship between government control and pay-performance sensitivity after controlling for factors associated with government control layers**

	Dependent variable = $\Delta COMP$			
	$\Delta Perf = \Delta OI$		$\Delta Perf = \Delta SW$	
<i>INTERCEPT</i>	-0.703** (-2.06)	-0.802** (-2.36)	-0.668* (-1.88)	-0.733** (-2.07)
$\Delta Perf$	0.058*** (5.53)	0.074*** (4.72)	0.000 (0.66)	-0.001*** (-3.13)
<i>LAYER_Resid</i>	0.032 (1.25)		0.003 (0.12)	
<i>D_LAYER_Resid</i>		0.078** (2.01)		0.047 (1.18)
$\Delta Perf * LAYER\_Resid$	0.006 (0.37)		0.002*** (2.86)	
$\Delta Perf * D\_LAYER\_Resid$		-0.027 (-1.36)		0.001*** (3.40)
$L\Delta Perf$	0.081*** (7.36)	0.060*** (5.56)	0.000 (1.36)	0.002*** (3.34)
$\Delta SIZE$	0.001** (2.57)	0.001** (2.54)	0.002*** (3.45)	0.002*** (2.62)
$\Delta LEV$	-0.016 (-0.08)	-0.010 (-0.05)	-0.369* (-1.81)	-0.319 (-1.59)
$\Delta LSH$	0.435 (1.24)	0.322 (0.92)	0.554 (1.52)	0.411 (1.13)
<i>GDP</i>	0.116*** (3.65)	0.121*** (3.82)	0.115*** (3.45)	0.119*** (3.63)
Observations	3138	3188	3138	3138
Adjusted $R^2$	0.07	0.06	0.05	0.05
F	11.785	11.323	7.978	8.809

*LAYER\_Resid* is residual obtained in the regression in Table 6 of *LAYER* on economic factors. *D\_LAYER\_Resid* is an indicator variable for large and small *LAYER\_Resid*. See Appendix A for variable definitions. Coefficients on year and industry dummies included in the models are not reported. T-statistics are provided in parentheses. \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels, respectively.

**Table 8****Panel A. The effect of corporate governance on the relationship between government control and executive compensation level**

	Dependent variable = Ln( <i>COMP</i> )							
	Independent directors		CEO is also Chairman		Shareholder participation in annual meetings		Big 4 Auditors	
	High	Low	No	Yes	High	Low	Yes	No
<i>INTERCEPT</i>	3.127*** (5.44)	3.010*** (7.30)	2.719*** (7.29)	4.286*** (5.84)	3.349*** (6.94)	2.843*** (6.09)	5.085*** (3.29)	3.314*** (8.72)
<i>RET</i>	0.024 (0.85)	0.078*** (3.59)	0.047** (2.45)	0.087** (2.17)	0.082** (2.41)	0.051** (2.45)	0.168 (1.40)	0.063*** (3.12)
<i>LAYER</i>	0.098*** (3.15)	0.074*** (3.72)	0.091*** (4.97)	0.027 (0.65)	0.101*** (4.08)	0.053** (2.37)	0.085 (1.03)	0.084*** (4.68)
<i>LRET</i>	0.142*** (4.03)	0.128*** (4.69)	0.137*** (5.82)	0.153*** (2.83)	0.186*** (4.85)	0.100*** (3.44)	0.205 (1.17)	0.176*** (6.89)
<i>SIZE</i>	0.313*** (12.95)	0.304*** (18.33)	0.315*** (20.93)	0.296*** (9.63)	0.296*** (14.74)	0.318*** (17.04)	0.257*** (4.58)	0.298*** (18.98)
<i>LEV</i>	-0.637*** (-4.86)	-0.422*** (-4.85)	-0.420*** (-5.23)	-0.796*** (-4.99)	-0.437*** (-4.05)	-0.517*** (-5.34)	0.514 (1.57)	-0.494*** (-6.21)
<i>LSH</i>	-0.648*** (-4.51)	-0.487*** (-4.80)	-0.600*** (-6.62)	-0.333* (-1.71)	-0.824*** (-6.41)	-0.546*** (-4.25)	-1.354*** (-3.50)	-0.557*** (-6.22)
<i>GDP</i>	0.286*** (7.84)	0.284*** (11.16)	0.299*** (12.82)	0.191*** (4.22)	0.286*** (9.46)	0.286*** (9.86)	0.178** (2.15)	0.276*** (12.13)
Observations	1013	2062	2478	645	1537	1538	158	2639
Adjusted $R^2$	0.33	0.33	0.35	0.28	0.35	0.32	0.30	0.32
F	27.666	54.888	72.294	14.216	43.039	40.476	4.748	67.011

**Table 8 – Continued**

**Panel B. The effect of corporate governance on the relationship between government control and pay-performance sensitivity**

	Dependent variable = $\Delta COMP$							
	Independent directors		CEO is also Chairman		Shareholder participation in annual meetings		Big 4 Auditors	
	High	Low	No	Yes	High	Low	Yes	No
<i>INTERCEPT</i>	-1.111 (-1.62)	-0.468 (-1.14)	-0.301 (-0.73)	-2.080*** (-2.98)	0.167 (0.30)	-1.389*** (-3.00)	3.209 (1.48)	-0.791** (-2.13)
<i>ΔSW</i>	-0.003 (-1.33)	-0.005*** (-3.04)	-0.005*** (-3.38)	0.011** (2.52)	-0.006*** (-3.31)	-0.001 (-0.47)	0.003 (0.53)	-0.007*** (-4.43)
<i>LAYER</i>	0.003 (0.05)	0.002 (0.07)	-0.002 (-0.06)	0.052 (0.84)	-0.022 (-0.53)	0.033 (0.89)	-0.054 (-0.27)	0.003 (0.11)
<i>ΔSW*LAYER</i>	0.002 (1.32)	0.002*** (2.98)	0.002*** (3.10)	-0.003* (-1.80)	0.003*** (3.12)	0.000 (0.19)	-0.001 (-0.49)	0.003*** (4.28)
<i>L ΔSW</i>	0.003*** (2.86)	0.000 (0.75)	0.001** (2.00)	0.002* (1.74)	0.000 (0.83)	0.013*** (7.67)	0.001 (1.38)	0.001 (1.20)
<i>ΔSIZE</i>	0.001 (0.34)	0.002*** (3.38)	0.003*** (2.96)	0.001 (0.56)	0.003*** (3.26)	0.001 (0.57)	0.001 (0.72)	0.004*** (3.09)
<i>ΔLEV</i>	-0.069 (-0.18)	-0.489** (-2.03)	-0.169 (-0.73)	-0.796** (-2.03)	-0.261 (-0.72)	-0.193 (-0.83)	-0.045 (-0.03)	-0.282 (-1.32)
<i>ΔLSH</i>	0.183 (0.26)	0.413 (0.97)	0.655 (1.57)	-0.667 (-0.91)	-0.996 (-1.47)	0.172 (0.40)	-0.191 (-0.05)	0.353 (0.95)
<i>GDP</i>	0.169*** (2.66)	0.085** (2.22)	0.087** (2.29)	0.200*** (3.02)	0.057 (1.15)	0.170*** (3.93)	-0.285 (-1.50)	0.117*** (3.36)
Observations	1013	2062	2478	645	1537	1538	158	2639
Adjusted $R^2$	0.03	0.05	0.05	0.05	0.07	0.07	0.04	0.06
F	2.593	6.489	7.845	2.789	6.220	6.595	1.297	8.350

See Appendix A for variable definitions. Coefficients on year and industry dummies included in the models are not reported. T-statistics are provided in parentheses. \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels, respectively.

**Table 9****The effect of incentive pay schemes on future performance****Panel A. Distribution of incentive pay schemes in SOEs**

	Total (1)	Strong Gov Control (CTRL = 0) (3)	Weak Gov Control (CTRL = 1) (2)	t-statistics of (2)-(3)
<i>HPHS</i>	31.90	29.53	36.40	-4.10***
<i>HPLS</i>	18.34	16.91	21.04	-2.93***
<i>LPHS</i>	22.82	24.89	18.90	4.16***
<i>LPLS</i>	26.94	28.66	23.66	3.25***

**Panel B. The effect of incentive pay schemes on future return on assets with government control measured by *LAYER***

	Dependent variable = $ROA_{t+i}$					
	Year t+1		Year t+2		Year t+3	
<i>INTERCEPT</i>	-0.229*** (-8.91)	-0.304*** (-10.65)	-0.205*** (-4.37)	-0.265*** (-7.00)	-0.051 (-1.22)	-0.092** (-1.98)
<i>LAYER</i>	0.004** (2.48)	0.003** (2.02)	0.004* (1.70)	0.002 (1.13)	0.001 (0.36)	0.000 (0.02)
<i>HPLS</i>		-0.005 (-1.43)		-0.006 (-1.32)		-0.011** (-2.10)
<i>LPHS</i>		-0.013*** (-4.05)		-0.019*** (-4.41)		-0.009* (-1.85)
<i>LPLS</i>		-0.023*** (-7.15)		-0.025*** (-6.20)		-0.024*** (-4.80)
<i>ROA</i>	0.299*** (17.41)	0.270*** (15.37)	0.091** (2.46)	0.069*** (3.11)	0.160*** (5.76)	0.131*** (4.64)
<i>SIZE</i>	0.014*** (11.54)	0.018*** (13.16)	0.012*** (5.36)	0.016*** (9.10)	0.004** (2.09)	0.007*** (3.16)
<i>LEV</i>	-0.115*** (-16.43)	-0.114*** (-16.34)	-0.086*** (-6.51)	-0.087*** (-9.76)	-0.053*** (-4.77)	-0.053*** (-4.83)
HPLS=LPLS	NA	25.81***	NA	18.59***	NA	5.01**
Observations	3447	3447	2608	2608	1765	1765
Adjusted $R^2$	0.29	0.30	0.12	0.15	0.08	0.10
F	100.315	87.011	19.138	24.528	11.251	11.294

**Panel C. The effect of incentive pay schemes on future return on assets with government control measured by  $D\_CTRL$**

	Dependent variable = $ROA_{t+i}$					
	Year t+1		Year t+2		Year t+3	
<i>INTERCEPT</i>	-0.224*** (-8.80)	-0.299*** (-10.58)	-0.201*** (-4.31)	-0.312*** (-8.32)	-0.054 (-1.28)	-0.115** (-2.48)
<i>D_CTRL</i>	0.005** (2.01)	0.004 (1.51)	0.004 (1.26)	0.003 (1.01)	0.003 (0.90)	0.002 (0.64)
<i>HPLS</i>		-0.005 (-1.40)		-0.004 (-0.93)		-0.010** (-1.98)
<i>LPHS</i>		-0.013*** (-4.08)		-0.021*** (-4.96)		-0.010** (-2.02)
<i>LPLS</i>		-0.023*** (-7.16)		-0.027*** (-6.56)		-0.025*** (-5.02)
<i>ROA</i>	0.300*** (17.44)	0.270*** (15.40)	0.091** (2.45)	0.056** (2.49)	0.160*** (5.75)	0.127*** (4.46)
<i>SIZE</i>	0.014*** (11.60)	0.018*** (13.23)	0.012*** (5.36)	0.018*** (9.96)	0.004** (2.16)	0.008*** (3.42)
<i>LEV</i>	-0.115*** (-16.39)	-0.114*** (-16.32)	-0.085*** (-6.53)	-0.083*** (-9.36)	-0.052*** (-4.75)	-0.050*** (-4.60)
<i>HPLS=LPLS</i>	NA	26.15***	NA	25.09***	NA	6.44**
Observations	3447	3447	2608	2608	1765	1765
Adjusted $R^2$	0.29	0.30	0.12	0.13	0.08	0.09
F	100.252	86.983	18.979	23.749	11.317	10.971

See Appendix A for variable definitions. Coefficients on year and industry dummies included in the models are not reported. T-statistics are provided in parentheses. HPLS=LPLS provides the F-test statistics on whether the coefficients on HPLS and LPLS are equal. \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% levels, respectively.